

# Sixth Sense Technology: A Gesture-Based Wearable Computing Review

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**Abstract** - The Sixth Sense Technology has become popular since last couple of years. Data encourages us to make decisions and affect the suitable activity which is required to be taken. This paper centers around a wearable gestural interface (a gadget) comprising the possibility of the equivalent previously mentioned Sixth Sense Technology that connections the instructive and information arranged learning not cognoscible normally by the five faculties from the physical world around us, with the computerized data and enables us to utilize our characteristic hand motions to speak with the advanced data, involving different applications alongside various types of parts, making the data accessible on our fingertips at lightning speed.

- Symbolic Responses
- Speech
- Sound
- Gait

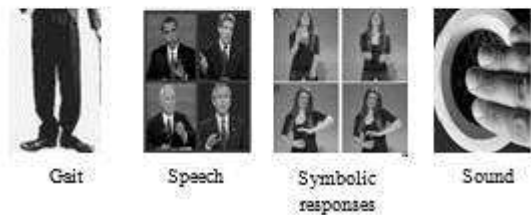


Fig. Different types of gesture

## 1. INTRODUCTION

We are susceptible to the five fundamental senses, i.e. feel, see, taste, smell and hear. Apart from all these fundamental senses, there is also a sort of sense called 'Sixth Sense'. Sixth Sense Technology has affirmed its place in the technical area, being the latest vernacular. This new technology, which has its connection to the impact of these six senses, has progressed. Sixth Sense is a wearable "gesture-based" tool that broadens the true world with digital data and let individuals communicate with it by means of distinct gestures and design an environment. Information is usually written on paper or computer, but sixth sense technology extracts data from it and integrates information and reality seamlessly. The gap between the digital globe and the human world is bridged with sixth-century technology. Thanks to this technology, human-computer interaction is very versatile. This technology enables us to virtualize stuff in the true globe and understand much more about an item very efficiently, readily and fast. Gestures are generally used in the sixth sense because they are the most crucial and important form of human communication. Gestures offer a number of benefits over the traditional human-computer system because it provides a touch less system so the physically challenged individual, elderly users, and health care systems can be of particular assistance while preserving sterility.

Gestures can be of different type such as

- Facial expression
- Hand
- Eye

Gestures can be used in the sixth sense to

- 1) Generate a practical interaction or event.
- 2) Direct control of an object.

The Virtual Environment (VE) provides a 3D environment in which an individual can communicate naturally and powerfully with the environment directly with virtual objects. Machine learning & Intelligence: Combines a broad range of sophisticated technology to provide machines with the capacity to learn, adapt, make choices and display behaviours. Some of the intelligence functions, such as neural, expert systems and self-organizing maps, are elements of a plug-in- they learn and control very high-quality procedures. Other features, including Fuzzy Logic, Bayes Theorem, and Genetic Algorithms, are building blocks-often offer advanced reasoning and analytical capabilities used in other machine- sensing components. The capacities of machine intelligence add strong analytical, individualization, self-healing and adaptive. It is also central to several sophisticated data mining and knowledge discovery departments in Scianta.

## 2. EXISTING METHODOLOGIES

Sixth Sense technique is a mini-projector coupled with a camera, a mobile phone and all the information stored on the web functioning such as the Cloud computer. The hardware components are connected in a wearable Contrivance like a wireless pendant. Both the camera and projector are connected in the user pocket to the pocket computer.

1. Software- The Sixth Sense software will be open source for managing video stream data captured from its camera. In so far as this claims to be a finite number of things, the user's interfaces or advanced programs will not be there. In order to make sure the security of the software, it will be much harder and secured in the device. The unique language to cod for a Sixth Sense device will be interesting to study.

2. Hardware- It requires some powerful hardware as it appears to be to operate the Sixth Sense. The narrator wears some control devices, including color markers, camera and display systems, in some community presentations. They should be light and easy to control. However, the Sixth Sense technology's hardware integration has also been very innovative because it has an integrated camera and pen as standard objects.

3. Projector- It generates visual information that can be used as interfaces on surfaces, walls and physical objects around us.

4. Camera- The device uses computer-based methods to recognize, and track user hand gestures and physical objects.

5. Colored Markers- Colored markings placed with easy computer vision techniques at the tip of the user's finger. It helps the webcam in monitoring finger movement. The movements and agreements of these holders are interpreted as activities that act as interaction instructions for the desired interfaces of the application.

6. Mobile device- A laptop, PDA, mobile phones, etc. might be the mobile device. These are connected to other hardware devices and send projection information to the projector. What may be essential is that a mobile device is a system. It signifies we can carry it with us anywhere we want. It's so light. It's like a mobile phone and so simple to use.

## 3. LITERATURE REVIEW

There is indeed a lot of studies in the areas of human-computer interaction (HCI) and virtual environment. Researchers have tried to detect a virtual object using HCI recording equipment to monitor the system environment. Various natural actions can be identified, monitored and analyzed using cameras as the input device. We used a

number of picture characteristics and gestures Templates to assist accomplish these gestures. Cootes et al used deformable objects with Active Shape Models (ASM). Chu-Feng Lien used the fingertips to control the mouse cursor only by his fingertips and the method of clicking was based on the image density and required that the user keep the mouse cursor for a short time at the desired location. Shahzad Malik has created a real-time system that traces each hand's thumb and index finger's 3D position and 2D orientation without using a unique color object or guide.

## 4. METHODS AND MATERIALS

To implement home security using Sixth Sense Technology we'll need a few sensors to monitor data and identify the real-time environment objects. A camera needs to be installed on the door which is connected to a home network for real-time monitoring of the environment and to distinguish between a genuine person and an intruder. Retina sensor to distinguish the owner and outside people. If the camera detects any suspicious activity around, the sensor sends the suspicious activity video and images to the owner with an option to watch the live footage. This live footage and suspicious activity will be sent to the owner only when a proximity sensor detects the presence of an object at a specific distance from the door. For no interruption of monitoring, a power backup supply will be connected to these sensors. If there is any failure detected between the sensors and the power supply device, the log information will be sent to the user on an immediate basis. To store the data collected from the sensors and other devices, a cloud storage Server will be maintained to access real-time and past monitoring of data. Access to cloud storage will only be available to the admin user. Suppose a registered user walks to the door, camera monitors and stores the data on the server with the timestamp. To bypass the door security, a retina scan will be performed, if a match is found door gets unlocked. If no match is found the user is alerted with the real-time video surveillance. Suppose an intruder tries to intrude in the house, the monitoring devices like a camera, the proximity sensor will alert the user about the suspicious activity. The user can report this suspicious activity to the nearest police station.

## 5. DATA AND RESULTS

The survey says approximately 41% of surveys wanted to spend \$501-\$1500 for intelligent safety or safety equipment while 35% were ready, for home intelligent security goods, to pay less than \$501. 67% of people hold the reason that they buy home smart security products for protecting homes against intruders/thieves [3].

52% say that they want to get remote access to their homes/business when they are away from home, so they decide to buy security camera systems [3].

30% want to monitor all rooms in their houses anywhere at home with security products [3].

The Asia Pacific dominated the global industry, contributing over 35% of the market revenue in 2015. The presence of a key sensor and consumer electronics vendors in the region has led the region to hold a major share in the biometric Sensor industry [4].

The rising application of fingerprint and facial recognition and authentication as biometric technology in devices such as smartphones, tablets, and laptops, along with another smart handheld device have led to market proliferation. The consumer electronics segment dominated the overall end-user industry accounting for over 25% of the market volume share in 2015 [4].

Optical, capacitive, thermal, ultrasound and electric field Sensor are extensively used in capturing an individual's biometrics. Optical Sensors accounted for over 40% of the industry share and are expected to sustain their supremacy over the forecast period. Fingerprint scanners used in commercial buildings and offices for access control and log management extensively employ optical Sensors for capturing, recognizing, and verifying fingerprints [4].

## 6. CONCLUSION

The Sixth Sense is designed to incorporate data from the globe without difficulty. The future relies on Sixth Sense. The control of machinery and equipment in the enterprise is simple. It assists to tap various apps for various designers and technicians into the imagination, innovation, need and desire of them. The inventor, therefore, decided to open source it so that it can be called open source software, given its extensive apps. For individuals with different capacity, this technology can replace 5th sense. This technology bringing a dramatic shift in science and technology.

## 7. REFERENCES

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